

best suited to amounts of nitrogen running from 0.5 to 5 mg., and the substance taken for determination should correspond to such quantities of nitrogen. The apparatus consists of small Kjeldahl flasks, fume absorbers, micro-burners, Ostwald pipettes, and small condensers, all readily obtainable or easily constructed. Titration is used, rather than the colorimeter method, for the actual determination. A comparison of the determinations with the micro and macro-Kjeldahl method shows that the micro method can be relied upon as reasonably accurate. The method will be exceedingly valuable with advanced classes in physiology.—CHARLES A. SHULL.

**Carbon nutrition.**—The ability of *Glomerella cingulata* to utilize certain pentosans and pentoses as a source of carbon has been investigated by HAWKINS.<sup>25</sup> He finds that arabin and xylan, and the derived sugars, arabinose and xylose, may be used as the sole source of carbon. When this fungus causes rot in apples, it decreases the total furfural-yielding content of the apple, but the alcohol-soluble portion of the furfural-yielding material is increased. This change indicates that the pentose sugars are split off from the more complex pentosans of the apple. The enzyme producing this change was sought. Filtered extract of the mycelium, acting under aseptic conditions, is able to change xylan to xylose, but it loses its power when boiled. It is clear, therefore, that a xylanase is present in the fungus or its extract which can hydrolyze xylan.—CHARLES A. SHULL.

**Plant formations of Canada.**—In a brief bulletin of less than a score of pages MACOUN and MALTE<sup>26</sup> have outlined some of the most strikingly characteristic plant formations of Canada and noted their distribution and dominant species. It will serve to give some idea of the flora as a whole, and will indicate the wide diversity to be found, extending as it does from rich mesophytic forests of conifers and deciduous trees to xerophytic grassland and Arctic tundras.—GEO. D. FULLER.

**Californian plants.**—An addition to our knowledge of the vegetation of a portion of the Sierra Nevada Mountains comes in the form of an annotated list of species by PARISH<sup>27</sup>. The region includes associations of chaparral and conifer forests; among the latter *Pinus monophylla*, *P. ponderosa*, and *P. Murrayana* dominate at different altitudes.—GEO. D. FULLER.

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<sup>25</sup> HAWKINS, L. A., The utilization of certain pentoses and compounds of pentoses by *Glomerella cingulata*. Amer. Jour. Bot. 2:375-388. 1915.

<sup>26</sup> MACOUN, J. M., and MALTE, M. O., The flora of Canada. Can. Geol. Survey. Museum Bull. 26:14. 1917.

<sup>27</sup> PARISH, S. B., An enumeration of the Pteridophytes and Spermatophytes of the San Bernardino Mountains, California. Plant World 20:163-178, 208-223, 245-259. 1917.